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C. REMARKS

1. Summary of the Claims

Claims 1-21 are currently pending in the application. Claims 1, 8, and 15 are independent claims. Claims 1, 4, 8, 11, and 15-21 have been amended. No claims have been added or cancelled. No new matter has been added. Reconsideration of the claims is respectfully requested.

2. Examiner Interview

Applicants note with appreciation the telephonic interview conducted between Applicants' patent agent, Scott Schmok, and the Examiner on September 20th, 2004. During the telephonic interview, the Examiner and Applicants' patent agent discussed the 103 reference (Bamford, et al., U.S. Patent No. 5,870,758). In particular, Applicants' patent agent highlighted the differences between the Bamford reference and limitations included in Applicants' claim 1. Applicants' patent agent emphasized that Applicants compare changes in a data record to one or more rules in order to determine whether to create a snapshot of a data record. Applicants' patent agent pointed out that Bamford does not use rules to determine whether to generate a snapshot record, but, instead, determines whether a change is made to a database and automatically rolls back a transaction, resulting in a reconfigured database. The Examiner suggested amending Applicants' independent claims to further limit Applicants' "rules" in order to read over the art of record.

Applicants have made such amendments to independent claims 1, 8, and 15. While no agreement was reached regarding the claims, Applicants respectfully submit that, as explained in

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further detail below, the amendments made to claims 1, 8, and 15, place these claims and their respective dependent claims in condition for allowance.

3. Drawings

Applicants note that the Examiner did not indicate whether the formal drawings, filed with Applicants' application, are accepted by the Examiner. Applicants respectfully request that the Examiner indicate whether the formal drawings are accepted in the next office communication.

4. Claim Objections

Claims 4, 11, and 18 stand objected to because they include a grammatical informality. Applicants have amended claims 4, 11, and 18 in order to correct the grammatical informality and, in turn, request that the Examiner withdraw the objections to claims 4, 11, and 18.

5. Claim Rejections 35 U.S.C. § 112

Claims 8-14, 16, and 18-21 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regards as the invention.

Applicants respectfully traverse the rejections to claims 8-14. Applicants assert that, in claim 8, Applicants' claiming language is explicitly clear because Applicants' "nonvolatile storage" and "memory" are known to be different to those skilled in the art. Meaning, one skilled in the art can appreciate that a "nonvolatile storage" is a data storage location that retains data when power is removed, such as a

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computer disk drive. In addition, one skilled in the art can appreciate that "memory" may be in many forms, such as Random Access Memory (RAM), Static RAM, etc., whereby the memory may or may not retain data when power is removed. Therefore, since Applicants' claiming language is explicit, Applicants request that the Examiner remove the 112 rejection to claim 8. Claims 9-14 are dependent upon claim 8 and, are explicit as well. Therefore, Applicants request that the Examiner remove the 112 rejections to claims 9-14.

Applicants have amended claims 16, and 18-21 in order to have each of the claims depend upon independent claim 15. As such, Applicants request that the Examiner remove the 112 rejections to claims 16, and 18-21.

6. Claim Rejections 35 U.S.C. § 103, Alleged Obviousness

A. Bamford in view of Cantrell

Claims 1-4, 6-11, 13-18, and 20-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,870,758 to Bamford et al. (hereinafter "Bamford") in view of U.S. Patent No. 6,651,126 to Cantrell et al. (hereinafter "Cantrell"). Applicants respectfully traverse these rejections.

Each of the limitations included in the independent claims was rejected under 35 U.S.C. § 103(a) as being unpatentable over Bamford in view of Cantrell. A claim is unpatentable under § 103 only if the Office Action establishes a prima facie case of obviousness under § 103 as set forth in § 103 and the MPEP. MPEP 2142 states that:

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"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.   The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure."

Applicants assert that the Office Action has not established a prima facie case of obviousness because there is no motivation to combine the teachings of Bamford with the teachings of Cantrell.

Bamford teaches a "*system that allows multiple transactions to have concurrent access to data.*" (col 1: lines 8-10).   Meaning, when multiple users access a particular database, Bamford "*desires to provide a database system that implements the isolation levels specified in* [Structured Query Language] *92*" (col. 2, lines 51-53, emphasis added). As such, Bamford "*provides a serializable isolation level … by causing all statements in a transaction to see a snapshot of the database.   A snapshot of the database includes all of the changes made by a certain set of committed transactions*" (col 3: lines 59-62).

On the other hand, Contrell teaches "*a snapshot arbiter system for servicing multiple interrupt requests for a central processing unit (CPU) in a digital processor system, and for providing interrupts to the CPU corresponding to the interrupt requests*" (col 1: lines 59-63). Meaning, Cantrell prioritizes interrupt requests that are received by a microprocessor, which

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is a completely different area of technology than providing a serializable isolation level as taught by Bamford.

Combining Bamford with Cantrell adds complexity (i.e. interrupt priority) and does not provide any added feature or benefit to Bamford since Bamford uses a time at which it receives a transaction request to provide particular isolation levels.   Therefore, since there is no motivation to combine Bamford with Cantrell, Applicants have traversed the 103 rejection to Applicants' claims 1-4, 6-11, 13-18, and 20-21, and, as such Applicants' claims 1-4, 6-11, 13-18, and 20-21 are not obvious, and therefore allowable, over Bamford in view if Cantrell.

Notwithstanding the fact that a prima facie case of obviousness has not been established, Applicants' independent claims as amended are not obvious in light of Bamford and in view of Cantrell. Applicants' independent claims are directed to "creating snapshots of a data record" with limitations comprising:

- determining one or more changes to the data record;

- comparing the changes to one or more rules, wherein at least one of the rules corresponds to a field that is included in the data record; and

- copying one or more fields from the data record to a snapshot record in response to the comparison.

As discussed with the Examiner, Applicants have amended claim 1 to further limit Applicants' "rules" and specify that at least one of the rules correspond to a field that is included in the data record. For example, one of the data record fields may be a customer's phone number and, when the

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phone number changes, Applicants' invention may create a snapshot record.

In contrast, Bamford teaches determining whether to roll back a transaction based upon an excluded transaction that modifies particular data. When Bamford determines that data has been modified, Bamford **automatically** rolls back a transaction, and never teaches or suggests, comparing the data modification to one or more rules that corresponds to a field that is included in the data record as claimed by Applicants.

The Office Action uses two references in Bamford as a basis to reject the second element of Applicants' amended claim 1. However, after closer inspection of the two references, neither reference teaches or suggests comparing the data modification to one or more rules that corresponds to a field that is included in the data record as claimed by Applicants. Particularly, the first reference, which is on col. 7, lines 43-55, state:

> "...However, the specific rule for determining the snapshot set for a transaction may vary from implementation to implementation. For example, one implementation may establish the snapshot set for a transaction to be all transactions that committed prior to the first update to occur after the beginning of the transaction" (emphasis added)

As can be seen, the first reference does not teach or suggest comparing the data modification to one or more rules that corresponds to a field that is included in the data record as claimed by Applicants. Rather, the first reference teaches the use of rules to determine which transactions should be included in a snapshot set based upon a particular timeframe.

Furthermore, the Office Action's second reference in Bamford that is used as a basis for rejecting the second

element of Applicants' claim 1 states, in Bamford on col 18, lines 42-47:

> "<u>comparing said data container to said reconstructed data</u> <u>container</u> to determine which groups of one or more elements in said data container contain changes committed by transactions that do not belong to said particular set; <u>if any groups</u> of one or more elements ...contain changes...then rolling back said transaction; and <u>if no</u> <u>groups</u> of one or more elements ...contain changes... then performing said update operation." (emphasis added)

As can be seen above, Bamford compares a data container to a reconstructed data container, and if anything is changed, Bamford teaches to automatically roll back transactions. This is completely different than comparing data modification to one or more rules that corresponds to a field that is included in the data record as claimed by Applicants. Bamford never compares data record changes to one or more rules that correspond to a field included in the data record. Rather, Bamford compares one database to another database, and automatically rolls back particular transactions if an excluded transaction made changes to an element.

Furthermore, Contrell does not teach or suggest "*comparing the changes to one or more rules, <u>wherein at least one of the rules corresponds to a field that is included in the data record</u>*" as claimed by Applicants. Therefore, neither Bamford nor Contrell, taken together or separately, teach or suggest Applicants' claimed limitation of "comparing the changes to one or more rules, <u>wherein at least one of the rules corresponds to a field that is included in the data record</u>."

Since Applicants have shown that neither Bamford nor Contrell, taken together or separately, teach or suggest all the limitations included in Applicants' amended claim 1, Applicants have overcome the rejection to claim 1 and the claim

is not obvious, and therefore allowable, over Bamford in view of Contrell.

Claim 8 as amended is an information handling system claim including the same limitations of amended claim 1 and, therefore, is allowable for the same reason as amended claim 1. Claim 15 as amended is a computer program product claim including the same limitations of amended claim 1 and, therefore, is allowable for the same reason as amended claim 1.

Notwithstanding the fact that claim 2 is dependent upon amended claim 1 and therefore allowable for the same reasons as amended claim 1, claim 2 adds the limitations to amended claim 1 of:

- writing transaction data corresponding to the copying to a transaction log file, wherein the transaction data includes an address corresponding to the snapshot record.

The Office Action contends that Bamford teaches *"writing transaction data... wherein the transaction data includes an **address** corresponding to the snapshot record"* as claimed by Applicants. However, upon closer inspection, Bamford <u>does not</u> include an address corresponding to the snapshot record in the transaction data and, therefore, does not even contemplate, let alone teach, writing transaction data... wherein the transaction data includes an address corresponding to the snapshot record. The Office Action uses col. 9, lines 29-40 in Bamford as its basis for rejecting claim 2. However, col. 9, lines 29-40 in Bamford state:

"According to one embodiment of the invention, an undo log is kept for transaction tables. The undo log for a transaction table contains records of old entries that have been overwritten in the transaction table. For example, a typical record in the undo log of a

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transaction table will contain the slot number in which an entry had resided, and the sequence number and **snapshot number** of the entry. Therefore, even when the entry for a transaction has been overwritten, the snapshot number of the transaction may be determined by inspecting the undo log of the transaction table in which the entry for the transaction had originally resided." (emphasis added)

Bamford's undo log includes a snapshot number. After closer inspection of Bamford's term "snapshot number," the snapshot number has nothing to do with the location of a particular snapshot and, therefore, nothing to do with the address location of a particular snapshot record. Specifically, on col. 8, lines 34-47, Bamford states:

"A snapshot number is assigned to a transaction when the transaction commits to indicate to other transactions the transaction set(s) to which the transaction belongs. Various mechanisms may be used to generate snapshot numbers. For example, the actual system time that a transaction commits may be used as a snapshot number for the transaction…The present invention is not limited to any particular mechanism for assigning snapshot numbers, so long as it is possible to determine whether any given transaction belongs to a particular snapshot set by inspecting the snapshot number of the given transaction."

Bamford uses the snapshot number to identify whether a particular transaction should be included in a snapshot set. Bamford does not teach or suggest using the snapshot number as a means to locate or retrieve the snapshot. Particularly, on col. 10, lines 50-60, Bamford provides an example and states:

"It shall also be assumed that the [snapshot] counter was at 15 when the Read Consistent Mode transaction that shall be discussed in the present example began to execute…Under these conditions, a committed transaction belongs to the snapshot set of the Read Consistent Mode transaction if and only if the snapshot number that was assigned the committed transaction is equal to or less than 15." (emphasis added)

Furthermore, Contrell does not teach or suggest "*writing transaction data corresponding to the copying to a transaction log file, wherein the transaction data includes an address corresponding to the snapshot record*" as claimed by Applicants. Therefore, neither Bamford nor Contrell, taken together or separately, teach or suggest Applicants' claimed limitation of "*writing transaction data corresponding to the copying to a transaction log file, wherein the transaction data includes an address corresponding to the snapshot record.*"

Since Applicants have shown that neither Bamford nor Contrell, taken together or separately, teach or suggest all the limitations included in Applicants' claim 2, Applicants have overcome the rejection to claim 2 and the claim is not obvious, and therefore allowable, over Bamford in view of Contrell.

Claim 9 is an information handling system claim including the same limitations of claim 2 and, therefore, is allowable for the same reason as claim 2. Claim 16 is a computer program product claim including the same limitations of claim 2 and, therefore, is allowable for the same reason as claim 2.

Notwithstanding the fact that claim 4 is dependent upon amended claim 1 and therefore allowable for the same reasons as amended claim 1, claim 4 adds the limitations to amended claim 1 of:

- including a snapshot pointer in the data record that includes a first address corresponding to the snapshot record; and

- including a data record pointer in the snapshot record that includes a second address corresponding to the data record.

With respect to the first element of Applicants' claim 4, Applicants include a snapshot pointer in a data record that includes a first address location corresponding to the snapshot record and thus, modify the data record. The Office Action contends that Bamford teaches *"including a snapshot pointer in the data record"* as claimed by Applicants. The Office Action uses col. 9, lines 29-40 in Bamford as its basis for rejecting each of the elements included in Applicants' claim 2. However, after closer inspection, col. 9, lines 29-40 in Bamford state:

> "According to one embodiment of the invention, an undo log is kept for transaction tables. The undo log for a transaction table contains records of old entries that have been overwritten in the transaction table. For example, a typical record in the undo log of a transaction table will contain the slot number in which an entry had resided, and the sequence number and **snapshot number** of the entry. Therefore, even when the entry for a transaction has been overwritten, the snapshot number of the transaction may be determined by inspecting the undo log of the transaction table in which the entry for the transaction had originally resided."
> (emphasis added)

The Office Action's reference discusses a transaction log file, which is completely different than Applicants' data record. In addition, as discussed above in discussing Applicants' claim 2 rejection, Bamford's term "snapshot number" has nothing to do with the location of a particular snapshot and, therefore, nothing to do with a snapshot pointer.

Furthermore, Contrell does not teach or suggest *"including a snapshot pointer in the data record that includes a first address corresponding to the snapshot record"* as claimed by Applicants. Therefore, neither Bamford nor Contrell, taken together or separately, teach or suggest Applicants' claimed limitation of "including a snapshot pointer in the data record

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that includes a first address corresponding to the snapshot record."

Since Applicants have shown that neither Bamford nor Contrell, taken together or separately, teach or suggest all the limitations included in Applicants' claim 4, Applicants have overcome the rejection to claim 4 and the claim is not obvious, and therefore allowable, over Bamford in view of Contrell.

Claim 11 is an information handling system claim including the same limitations of claim 4 and, therefore, is allowable for the same reason as claim 4. Claim 18 is a computer program product claim including the same limitations of claim 4 and, therefore, is allowable for the same reason as claim 18.

B. Bamford in view of Cantrell and further in view of Sarandrea

Claims 5, 12, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,870,758 to Bamford et al. (hereinafter "Bamford") in view of U.S. Patent No. 6,651,126 to Cantrell et al. (hereinafter "Cantrell"), and further in view of U.S. Patent No. 4,748,573 to Sarandrea et al. (hereinafter "Sarandrea"). Applicants respectfully traverse these rejections.

Claim 5 is dependent upon amended claim 1 and therefore allowable for the same reasons as amended claim 1 as discussed above. Claim 12 is an information handling system claim including the same limitations of claim 5 and, therefore, is allowable for the same reason as claim 5. Claim 19 is a computer program product claim including the same limitations of claim 5 and, therefore, is allowable for the same reason as claim 19.

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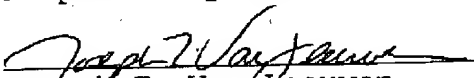   Akella, et. al. - 09/864,111

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Each of the remaining claims, 3, 6-7, 10, 13-14, 17, and 20-21 each depend, directly or indirectly, on one of the allowable independent claims 1, 8, and 15. Therefore, claims 3, 6-7, 10, 13-14, 17, and 20-21 are also allowable for at least the same reasons that the respective independent claims are allowable.

CONCLUSION

As a result of the foregoing, it is asserted by Applicants that the amended claims in the Application are in condition for allowance, and Applicants respectfully request an early allowance of such claims.

Applicants respectfully request that the Examiner contact the Applicants' attorney listed below if the Examiner believes that such a discussion would be helpful in resolving any remaining questions or issues related to this Application.

Respectfully submitted,

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